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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/536,508

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Ryuji Fukuda

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6481

757 7590 01/23/2008  
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EXAMINER

MULLIS, JEFFREY C

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

01/23/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/536,508	Applicant(s) FUKUDA ET AL.	
	Examiner Jeffrey C. Mullis	Art Unit 1796	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 November 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

Claims 1-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification as filed does not disclose that the isobutylene block copolymer does not substantially have any alkenyl group in the terminus thereof. This limitation is therefore new matter.

Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "substantially" is subjective and therefore unclear.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 6, 7 and 9-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Shim et al., Journal of Polymer Science: Part A: Polymer Chemistry, Vol. 36, 2997-3012 (1998).

Shim discloses a composition containing solvent, and incompletely coupled polystyrene-polyisobutylene block copolymer containing alkenyl end units. Note Figures 6 and 10 in this re. Since applicants component "B" is merely recited to be a "polymer", both the coupled and uncoupled (prearms) of Shim read on applicants "B" as well as "A" and Shim therefore anticipates claim 1. Furthermore, sequential reaction of monomers to produce block copolymers often results in homopolymer as an impurity due to failure to initiate subsequent charges of monomer and/or chain transfer and Shim's material at least prior to purification by precipitation therefore also would appear to contain some homopolymer. Note that Shim recognized this problem implicitly and analyzed the purified material for homopolymer in the last complete sentence in column 1 of page 2999. Those claims encompassing polystyrene reinforcing material are therefore also anticipated. With re to plasticizers, small molecules such as commonly used for solvents commonly function as plasticizers.

Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (US 6,140,418) in view of Nakagawa et al. (US 7,129,294) and further in view of Yamanaka (US 6,773,758).

Yamashita discloses a composition containing an aromatic vinyl-isobutylene block copolymer in combination with a crosslinked rubber (abstract) such as isobutylene

rubber (column 6, lines 22-28). Fillers (as in applicants reinforcing materials) and plasticizers may be added at column 9, lines 63- column 10, line 30. Dynamic crosslinking is disclosed at column 11, lines 1-27 or the rubber may be precrosslinked at column 9, lines 1-6. Crosslinking agents may be added at column 7, lines 3-5. With re to the polystyrene of claim 12 , note that the paragraph bridging the columns on page 2999 of Shim cited above implies that homopolystyrene is inherently an expected side product in formation of styrene-isobutylene block copolymers and there is no lower limit on the amount of polystyrene in claims 12 and Yamashita therefore appears to inherently meet the limitation of claim 12.

Patentees do not disclose that the isobutylene rubber contains an alkenyl end group.

Nakagawa discloses that crosslinked polymers such as polyisobutylene have excellent heat resistance and durability when alkenyl terminated (column 1, lines 51-61). Hence it would have been obvious to a practitioner having an ordinary skill in the art at the time of the invention to provide alkenyl end groups to the polyisobutylenes of the primary reference in order to extend the benefits of the secondary reference to the primary reference absent any showing of surprising or unexpected results. Allyl terminated polyisobutylene may be made by reaction of with allyltrimethylsilane at column 31, lines 25-35.

With re to conversion of a chlorine terminal polyisobutylene to ally terminated material note that Yamanaka at column 4, lines 50-55 discloses such a method and that conversion of halogen materials to alkenyl containing ones is also disclosed by

Nakagawa at column 10, lines 55-65. Hence it would have been obvious to a practitioner having an ordinary skill in the art at the time of the invention to react the chloro terminated polyisobutylene of Nakagawa with allyl trimethylsilane as taught by Yamanaka in order to obtain the allyl terminated polyisobutylene suggested for use by Nakagawa in the process of the primary reference motivated by the need for an allyl terminated polyisobutylene to practice the invention of Yamashita as modified by Nakagawa absent any showing of surprising or unexpected results.

The terminal disclaimer filed on 11-6-07 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US 7,105,611 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Applicant's arguments filed 11-6-07 have been fully considered but they are not persuasive. Shims' coupled (star block) copolymer reads on applicants component "A" in that the alkenyl groups on the uncoupled arms react and disappear on coupling. As set out above Shim discloses a mixture of coupled and uncoupled polymers as set out above.

Yamashita does not disclose or suggest either alone or in combination with any other reference that his block copolymer contains an alkenyl end unit. Nakagawa suggest that alkenyl end units be present on isobutylene rubber but does not disclose anything about isobutylene block copolymers. With re to unexpected results Yamashita

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disclose the use of both a isobutylene block copolymer and polyisobutylene rubber and applicants results cannot therefore be said to be comparative to Yamashita.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication should be directed to Jeffrey C. Mullis at telephone number 571 272 1075.

Jeffrey C. Mullis  
Primary Examiner  
Art Unit 1796

JCM

1-17-08

